Met Office

NEWS

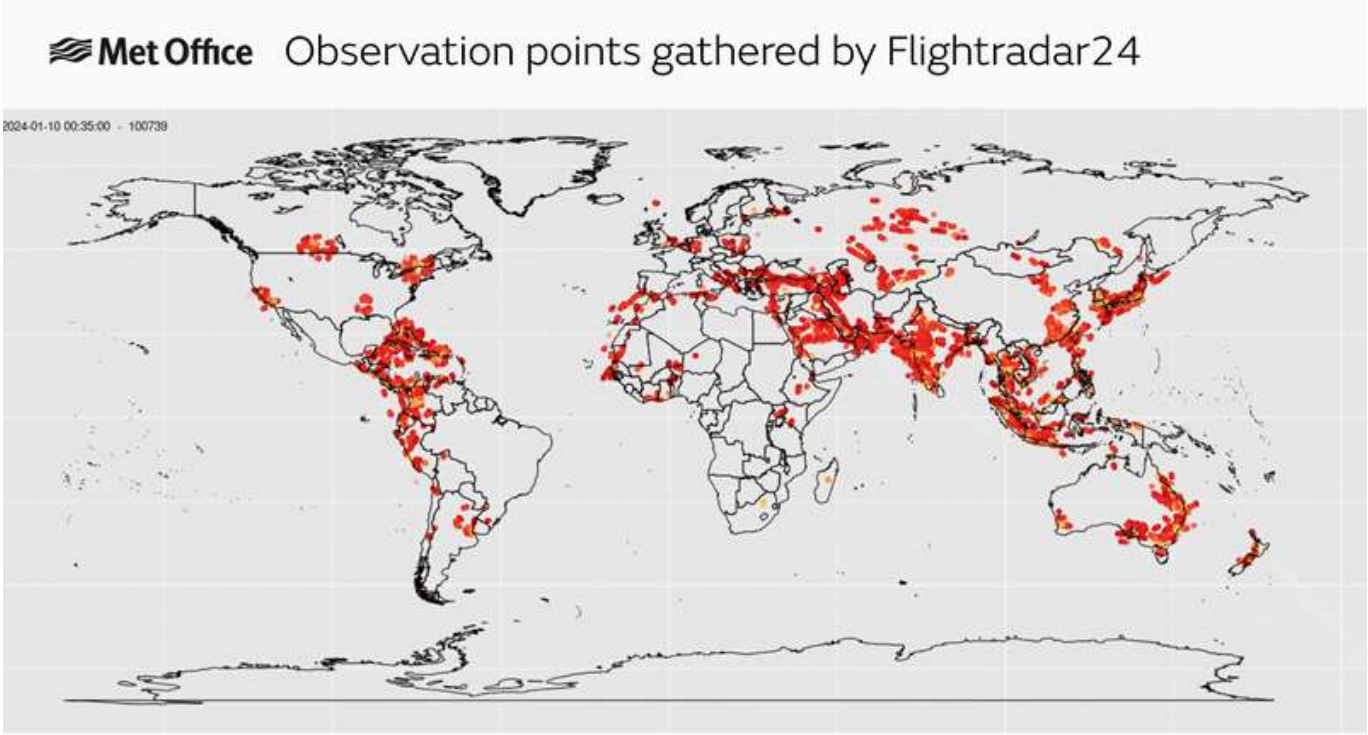
Aviation Data Enhances Met Office Weather Forecasts

Author: Nicola Maxey
11:01 (UTC) on Thu 6 Mar 2025

After a successful trial aircraft-generated data is being used by the Met Office in a move to further improve weather forecasting.

Flight tracking apps are not just useful for checking if a plane is running on time or on course. Since 2023 a Met Office trial has been integrating data received from thousands of aircraft every day into weather forecasting models.

Meteorologists rely heavily on robust data to refine forecasts, and during the trials the aircraft-generated data (Mode-S EHS) became an indispensable part of this process. This global expansion has included working in partnership with Flightradar24 for the raw data and the European Meteorological Aircraft Derived Data Centre (EMADCC) hosted by the Royal Netherlands Meteorological Institute (KNMI) for processing. The Met Office has been taking the high-volume data feed, which provides real-time atmospheric data including factors such as temperature and wind speed from different points in the atmosphere and ingesting this data into the Met Office Global Model.



Technical Services Associate Director at the Met Office, Bruce Truscott, said: “Early results following this trial suggest that the integration of Global Mode-S data into our forecasting systems will have a significant positive impact on our global model, allowing us to achieve greater precision and contribute towards further advances in forecasting skill. We are excited to be able to integrate this into our production systems in the coming months and to support our global partners to also benefit from the data.

“This is an exciting time for meteorology at the Met Office. Innovative advancements in technology and the availability of data are helping to extend the frontiers of forecasting. This collaboration underscores the importance of cross-industry partnerships and novel sources of observations in advancing meteorology and ensures we deliver our services to help people to stay safe and thrive.”

Key Benefits

Since the start of the trials to ingest aviation data into the Met Office Global Model early indications are there have been several tangible benefits potentially enhancing forecasting capabilities.

- **Improved Forecasting Accuracy**: Trials of the aircraft-derived observations indicate significant benefit to the reliability of weather models, providing a stronger basis for prediction.
- **Comprehensive Data Coverage**: High-frequency updates and wide spatial coverage address gaps in traditional observational methods.
- **Cost-Effective Solutions**: By utilizing existing air traffic control systems, this approach minimizes costs while delivering high-quality data. Demonstrating the benefits of novel sources of 3rd party weather observations.

Fredrik Lindahl, CEO, Flightradar24, said: “At Flightradar24, we’re proud to support the Met Office with data solutions that push the boundaries of weather science. This collaboration demonstrates how aviation data can address complex global challenges like climate forecasting.

“Our partnership will continue to evolve as new technologies and methodologies emerge. With advancements in data collection and analysis, the integration of aviation data into meteorology will only grow in scope and impact. Together, Flightradar24 and the Met Office are helping shape the future of weather prediction, ensuring better preparedness for weather-related challenges.”

The Met Office is also sharing this data under licence with global National Met Services and key partners to contribute directly to the advancement of meteorological science as part of World Meteorological Organisation Official Duties.

The Met Office is a key player in international aeronautical meteorology being one of only two World Area Forecast Centres, providing forecasts for long-haul flights, and one of nine Volcanic Ash Advisory Centres, monitoring volcanic ash emissions. The Met Office works widely with civil and military aviation, airports and offshore industries, sharing expertise across the globe.

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